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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,766	10/20/2003	Johannes A. Pardoen	A7512US	9570

33249 7590 01/23/2008

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EXAMINER
NILAND, PATRICK DENNIS

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
01/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,766	PARDOEN ET AL.	
	Examiner	Art Unit	
	Patrick D. Niland	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2007 and 26 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9,10,13-18,20,22-28 and 30-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20,22,23,25,28,30,31 and 33* is/are allowed.

6)☒ Claim(s) *1-7, 9-10, 13-18, 24, 26-27, 32, and 34-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The amendments of 9/17/07 and 9/26/07 have been entered. Claims 1-7, 9-10, 13-18, 20, 22-28, and 30-36 are pending.

2. Claims 7, 9, 13-15, 27, 35, and 36 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the discloses substituents, does not reasonably provide enablement for all of the substituents encompassed by the instant claims. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

A. The instant claims recite "substituted" without specifying the substituents. Therefore the claims encompass all possible substituents. The instantly claimed "substituted" reads on an infinite number of compounds resulting from the potentially infinite number of substitutions which can be performed on the recited compounds. In re Wands has 8 criteria, (MPEP 2164.01(a)), as shown below.

(A)The breadth of the claims;

(B)The nature of the invention;

(C)The state of the prior art;

(D)The level of one of ordinary skill;

(E)The level of predictability in the art;

(F)The amount of direction provided by the inventor;

(G)The existence of working examples; and

(H)The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

It is noted that the instant claims read on all potential substitutions of the recited compounds which encompasses an infinite number of compounds (Wands factor A). The specification does not describe how to make all such substituents, how to add them to the claimed compounds, nor how to select those substituents from the infinite list thereof which will function as required in the instant invention (Wands factors F, G). It would require an infinite amount of experimentation to determine how to make all of the substituents encompassed by the instant claims and another infinite amount of experimentation to determine which of these substituted compounds would function in the instantly claimed invention as required (Wands factor H). Chemistry is an unpredictable art (Wands factor E). The ordinary skilled artisan has not imagined nor figured out how to make all of the substitutions encompassed by the instant claim of "substituted" yet (Wands factors C, D, E, F, G, and H). The enabling disclosure is not commensurate with the full scope of the claimed "substituted".

3. Claims 24 and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 24 and 32 recite "an amine modifier". "An amine modifier" need not be "the" amine modifier of claims 20 and 28 respectively given the newly recited grammar of the claim, e.g. changing "the" to "an". This newly added scope is new matter as support therefore is not seen in the originally filed specification.

4. Claims 4, 7, 9, 13-15, 24, 26, 27, 32, 34, and 35-36 are rejected under 35 U.S.C. 112, second paragraph,

as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. There is no antecedent basis for the language of claim 7 in claim 1, from which claim 7 depends. It is therefore unclear what is intended by the recitation of claim 7.

B. It is unclear what is intended by "a fifth number of amine functional groups of the amine modifier" in claims 4 and 24. It is noted that the recitations of X "number" of functional groups such as those referenced in claim 1 section (a) need not reference all of the amine groups of the polyamines. It is therefore unclear whether or not "a fifth number of amine functional groups of the amine modifier" is intended to read on all of the amine functional groups of the amine modifier or if this language also reads on only a portion of the amine functional groups of the amine modifier. In the latter case, it is unclear how one determines what the portion is.

C. Claim 9 recites an average number of the claimed moieties. It is unclear if the average is a number, weight, z, or some other type of average.

D. Claims 24 and 32 recite "an amine modifier". "An amine modifier" need not be "the" amine modifier of claims 20 and 28 respectively given the newly recited grammar of the claim, e.g. changing "the" to "an". It is unclear what the amine modifier referenced by "an amine modifier" is intended to encompass. Need it be the amine modifier of claims 20 or 28 repectively or can it be some other amine modifier and, if so, what is this other amine modifier precisely?

E. Claims 26 and 34 recite a molecular weight of "more than 250" which encompasses polymeric species, particularly in the upper molecular weights of this range. Where the

molecular weights are those of polymeric species, it is unclear what type of polymer molecular weight is required by the claim, e.g. number average, weight average, z average, etc.

F. It is unclear what is meant by "integeter" of claim 36. This is clearly a typo of "integer".

G. The instant claim 32 recites "the amine-specific reagent". Claim 32 depends from claim 28. Claim 28 provides no antecedent basis for "the amine-specific reagent". It is therefore unclear what is intended by "the amine-specific reagent".

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-7, 9-10, 16-18, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Schipfer et al. (U.S. 4,563,515).

Schipfer et al. discloses a compound at column 1, lines 61-68 and column 2, lines 1-38, particularly that of formula II where R sub. 2 is the moiety of column 2, lines 31-35. It is noted that the penultimate NH from the terminal OH marks the residue of the polyaminde of section (a) of the instant claims and the hydroxyl acid or lactone attached thereto makes the moiety of section (a) of the instant claims. The next residue comes from a diisocyanate which falls within the scope of the instantly claimed amine specific reagents and the amide NH of formula II through the heterocyclic ring falls within the scope of the instantly claimed amine modifier with the extra hydroxyl acid moiety being encompassed by "comprising". The limitations of claims 1-7, 9-10, 16-18 since the intended uses of these claims do not differentiate over the compositions of the patentee claims containing the above discussed compound, and 36 are

thereby met when considered with the patentee's full disclosure of how to make such moieties.

Schipfer et al. disclose process comprising reacting polyamine having primary and secondary amino groups with hydroxy carboxylic acid or lactone to form product, i.e. polyamine derived compound, which is then reacted with epoxy resin having at least 2 epoxy groups, i.e. bifunctional amine specific reagent, and amine modifier such as N,N-dimethyl-l,3-propanediamine, i.e. corresponding to modifier of presently claimed formula III, to form intermediate product. There is also disclosed further step wherein the intermediate product is reacted with polycaprolactone which would inherently attach a matrix compatible moiety to form product, i.e. polyamine derivative. It is disclosed that the epoxy groups of the epoxy resin are reacted with the secondary amine in a ratio of 0.1-1 amino groups per available epoxy group. It is further noted that the polyamine includes diethylene triamine which is identical to polyamine of presently claimed formula I when W is amine, R1 is C2 alkylene, R3 is hydrogen, q is 1, and R2 is C2 alkylene There is also disclosed coating composition, i.e. paint, containing the above polyamine derivative. Attention is drawn to col. 5, lines 35-44 of Schipfer et al. which discloses reacting 1 mole diethylene triamine(DETA) with 2.1 moles caprolactone (CPL) to form amine which is then reacted in example 3 with epoxy resin and N,N-dimethyl-1,3-propanediamine (col. l, line 61-col.2, line 44, col.2, line 67-col.3, line 17, col.3, lines 42-53 and 59-60, col.3, line 66-col.4, line 16, col.5, lines 35-44, and col.8, lines 10-28). Column 3, lines 33 et seq. discloses the use of diisocyanate, which falls within the scope of the amended claims recitation that the amine specific reagent contain isocyanate group.

Given that the process of Schipfer et al. includes reaction with both bifunctional amine-specific reagent and amine modifier as presently claimed, it is clear that in the second step, an

intermediate containing at least two polyamine residue and at least one amine modifier residue is inherently formed which would be linked by the bifunctional amine-specific reagent. Further, although there is no specific formula given for the polyamine derivative, given that Schipfer et al. disclose process as presently claimed, it is clear that the polyamine derivative would inherently possess structure as set forth in presently claimed formula II. Additionally, although there is no disclosure that the polyamine derivative is a pigment dispersant, given that the polyamine derivative is formed by identical process as presently claimed, it is clear that the polyamine derivative would each inherently function as a pigment dispersant.

While there is no disclosure that the coating composition is a printing ink formulation as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that "if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction". Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner's position that the preamble does not state any distinct definition of any of the claimed invention's limitations and further that the purpose or intended use, i.e. printing ink, recited in the present claims does not result in a structural difference between the presently

claimed invention and the prior art composition and further that the prior art structure which is a composition identical to that set forth in the present claims is capable of performing the recited purpose or intended use.

Specifically, applicants argue that Schipfer et al. is not a relevant reference against present claims 1 and 36 given that there is no disclosure in Schipfer et al. of amine modifier as required in these claims.

However, it is noted that Schipfer et al. disclose (col.3, line 66-col.4, line 1 and col.4, lines 6-8) amine modifier that is N,N-dimethyl propanediamine-1,3 which has the formula:

H2N - (CH2)3 - N (CH sub. 3)sub. 2.

This amine modifier appears to be identical to the amine modifier of presently claimed formula III when y = z = 0, x = l, and Y is (CH2)3 – N(CH sub. 3) sub. 2 . That is, when y = z = 0 and x = 1, the amine modifier of presently claimed formula III is of the formula YNH2 wherein Y is an aliphatic group having 2 to 10 carbon atoms containing one or more tertiary amine groups. Schipfer et al. also disclose amine modifier of the formula YNH2 wherein Y is (CH2)3 –N(CH sub. 3) sub. 2 which is an aliphatic group having 5 carbon atoms and a tertiary amine group. Further, it is noted that N,N-dimethyl propanediamine-l,3 is identical to amine modifier of the present invention (see page 10, lines 12- 13). Thus, it appears that the amine modifier of Schipfer et al. is identical to that presently claimed.

In light of the above, it is clear that Schipfer et al. anticipate the present claims.

7. Claims 9 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Honig et al. (U.S. 5,369,190).

Honig et al. disclose process comprising reacting polyamine, i.e. diamine, triamine, or

tetramine, with cyclic carbonate to form hydroxyl-functional carbamate compound, i.e. polyamine derived compound, which is then reacted with diisocyanate, i.e. bifunctional amine-specific reagent, to form intermediate product. Attention is drawn to Table 1 that discloses reacting 2 mol diethylene triamine (DETA) with 3 mol ethylene carbonate which product is then reacted with diisocyanate as seen in Table 3. From this example, it is calculated that amount of ethylene carbonate, i.e. 3 moles, is 1 times the number of NH2 functional groups of the polyamine, i.e. 3. It is noted that diethylene triamine is identical to polyamine of presently claimed formula I when W is amine, R1 is C2 alkylene, R3 is hydrogen, q is 1, and R2 is C2 alkylene. Further, (col.1, lines 48-63, col.2, lines 13-20 and 32-48, and col.2, line 67-col.3, line 9). Given that Honig et al. disclose reaction with bifunctional amine-specific reagent as presently claimed, it is clear the intermediate product would inherently possess at least two polyamine residues linked by the bifunctional amine-specific reagent as presently claimed.

Although there is no specific formula given for the polyamine derivative, given that Honig et al. disclose process as presently claimed, it is clear that the polyamine derivative would inherently possess structure as set forth in presently claimed formula II. Further, although there is no disclosure in Honig et al. that the intermediate is a pigment dispersant, given that the intermediate is formed by identical process as presently claimed, it is clear that the intermediate would inherently function as a pigment dispersant.

While there is no disclosure that the coating composition is a printing ink formulation as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that "if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than

any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction". Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner's position that the preamble does not state any distinct definition of any of the claimed invention's limitations and further that the purpose or intended use, i.e. printing ink, recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art composition and further that the prior art structure which is a composition identical to that set forth in the present claims is capable of performing the recited purpose or intended use.

Applicants argue that Honig et al. is not a relevant reference against the present claims given that Honig et al. teach the use of diisocyanates that are half-blocked by monohydroxy compounds and thus do not contain two or more amine specific functional groups as required in the present claims.

It is agreed that Honig et al. teach the use of diisocyanates that are half-blocked by monohydroxy compounds. However, it is also significant to note that Honig et al. also disclose that the diisocyanates have an unblocking temperature below 180 °C (col. 1, line 56). Further, Hong et al. disclose reacting polyamine with cyclic carbonate to form hydroxy-functional

carbamate compound, i.e. polyamine derived compound, which is then reacted with the diisocyanate at 60-120 °C (col.2, lines 32-39).

Given that the reaction with diisocyanate takes place at temperature below 180 °C, which is the unblocking temperature of the diisocyanate, it is clear that when the diisocyanate is utilized in the reaction to produce the polyamine derivative as present claimed, the diisocyanate is unblocked and thus, does in fact contain two or more amine specific functional groups as required in the present claims.

In light of the above, it is clear that Honig et al. anticipate the present claims.

8. *Allowable Subject Matter*

9. Claims 20, 22-23, 25, 28, 30-31, and 33 are allowable over the prior art considered.

10. Claims 24, 26-27, 32, and 34-35 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1st and/or 2nd paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. Schipfer et al. (U.S. 4,563,515) disclose process comprising reacting polyamine having primary and secondary amino groups with hydroxy carboxylic acid or lactone to form product, i.e. polyamine derived compound, which is then reacted with epoxy resin having at least 2 epoxy groups, i.e. bifunctional amine specific reagent, and amine modifier such as N,N-dimethyl-1,3-propanediamine, i.e. corresponding to modifier of presently claimed formula III, to form intermediate product. There is also disclosed further step wherein the intermediate product is

reacted with polycaprolactone which would inherently attach a matrix compatible moiety to form product, i.e. polyamine derivative.

However, Schipfer et al. disclose reacting the polyamine-derived compound with reagent that is epoxy which is outside the scope of present claims 21, 26, and 27. Further, there is no disclosure or suggestion in Schipfer et al. of reacting the polyamine-derived compound with polyisocyanate as required in each of present claims 29 and 34.

Honig et al. (U.S. 5,369,190) disclose process comprising reacting polyamine, i.e. diamine, triamine, or tetramine, with cyclic carbonate to form hydroxyl-functional carbamate compound, i.e. polyamine derived compound, which is then reacted with diisocyanate, i.e. bifunctional amine-specific reagent, to form intermediate product.

However, there is no disclosure or suggestion in Honig et al. of amine modifier as required in present claims 21 and 29 and no disclosure or suggestion of reacting the -OH group of the polyamine derived compound or intermediate to attach a matrix-compatible moiety of more than 250 as required in present claims 26-27 and 34.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Thursday from 10 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick D Niland
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Art Unit 1796